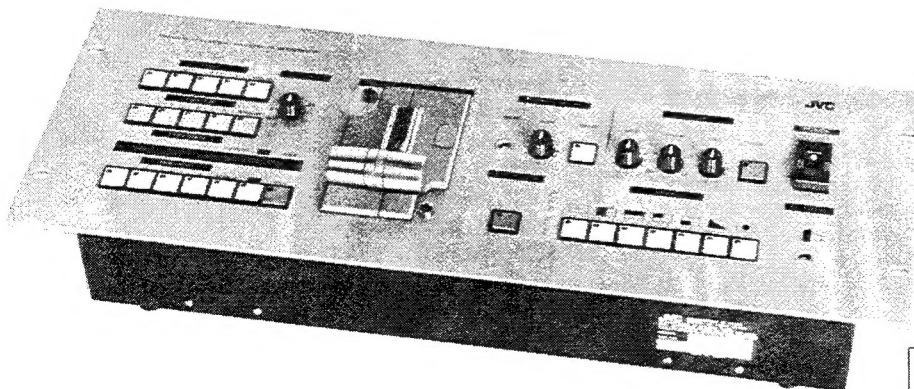


# JVC | Instructions

## COLOR SPECIAL EFFECTS GENERATOR **KM-1200**



**For Customer Use:**

Enter below the Serial No. which is located on the bottom of the cabinet. Retain this information for future reference.

Model No. KM-1200

Serial No. \_\_\_\_\_

Due to design modifications, the servicing procedures and data given in this manual are subject to possible change without prior notice.

# **WARNING:**

**TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

# **AVERTISSEMENT:**

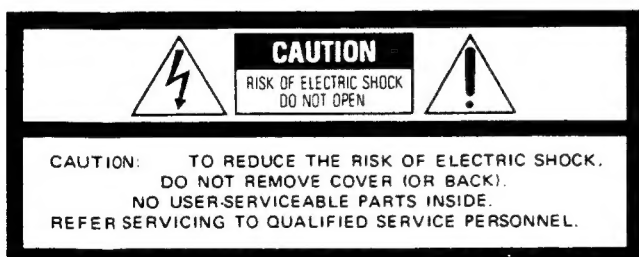
**POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LA PLUIE.**

## **Warning Notice FOR YOUR SAFETY**

To ensure safe operation the three-pin plug supplied must be inserted only into a standard three-pin power point which is effectively grounded through the normal household wiring.

Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth ground. Wrongly wired extension cords are a major cause of fatalities.

The fact that the equipment operates satisfactorily does not imply that the power point is properly grounded and that the installation is completely safe. For your safety, if in any doubt about the correct grounding of the power point, consult a qualified electrician.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Thank you for purchasing the KM-1200 Color Special Effects Generator. To gain maximum benefit from its use, it is suggested that you read these instructions carefully. After reading it, retain this booklet for future reference.

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# **1. FEATURES**

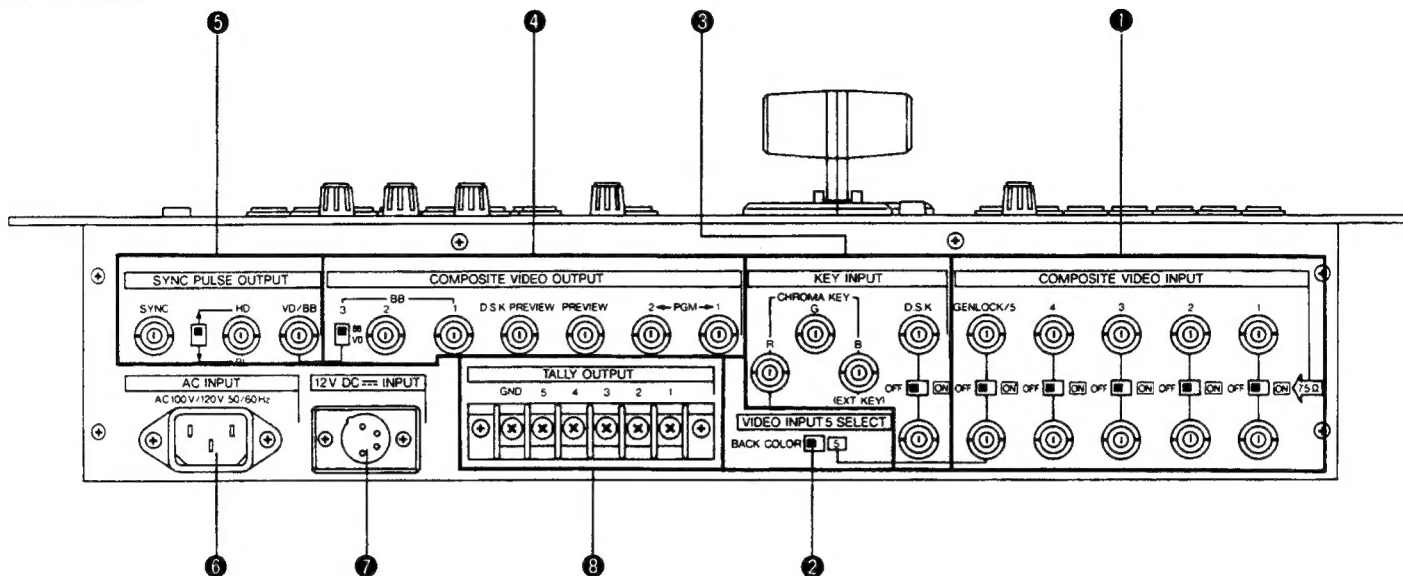
- **Chroma key generator built in**  
The built-in RGB chroma key generator enables chroma effects without using any external equipment. However, external keying is also possible via one of the Chroma Key Input terminals.
- **Downstream keyer built in**
- **Wipe effects**  
6 wipe effects are built in.
- **Auto-take function**  
An AUTO TAKE switch is provided so cut-in of desired picture on the preview monitor is possible.
- **Color background generator built in**
- **Vertical interval switching system**
- **DSK preview output terminal**
- **Built-in SSG with genlock function**
- **DC (11 to 17 V) operation possible**

# **2. PRECAUTIONS**

- For an extended service life, avoid using the unit in a place subject to extreme temperatures, high humidity, strong vibrations, excessive dust, or in a place near the source of noise.
- Avoid strong vibrations and shocks when installing or carrying.
- Do not apply strong force to the fader lever or handle it violently.
- The standard positioning of the control panel is horizontal. Never lean it by more than 45° from the horizontal.
- When RS-2000/RS-1900/RS-110/RS-500 remote control units are used together in a system centered around the KM-1200, set the tally control mode of all units to "voltage supply". (See page 9)
- When the KM-1200 is mounted in an AV console or rack, leave a 1-unit space above the control panel for rear panel connections.

### 3. CONTROLS, CONNECTORS AND INDICATORS

#### Rear Panel



#### ① COMPOSITE VIDEO INPUT connectors

Inputs 1 – 4: BNC connectors with bridged connection. When not bridge-connected, set the 75  $\Omega$  termination switch to "ON".

GENLOCK/5: For genlock operation, input composite video (VBS) or black burst (BB) signal to this connector.

When there is no signal input to this connector, the synchronizing mode is set to internal mode (INT MODE) using the built-in SSG.

#### ② VIDEO INPUT 5 SELECT switch

When the input to GENLOCK/5 connector ① is used for genlock and when all the input connectors 1 to 4 have already been used, the GENLOCK/5 input can be used as the fifth video input signal by setting this switch to "5". Consequently, a color background cannot be used. However, when the input to the GENLOCK/5 connector is off, the fifth input reverts to the background color even if this switch is set to "5".

#### ③ KEYING SIGNAL INPUT connectors

DSK: Video signal input for downstream keying.

CHROMA KEY: Video signal inputs for chroma keying. (R/G/B signals without sync)

(EXT. KEY): Video signal input for external keying.

#### Note:

- Among the above keying functions, chroma keying and external keying cannot be performed at the same time.

#### ④ COMPOSITE VIDEO OUTPUT connectors

PGM 1 } Program video output connectors.

PGM 2 }

PREVIEW: Preview video output connector.

DSK PREVIEW: DSK preview output connector. By monitoring this output, the settings (slice and color levels) of the downstream keyer can be checked without inserting it in the program line.

BB-1 }  
BB-2 }  
BB-3:

Outputs of black burst\* signal.

When the BB/VD switch is set to "BB", the black burst signal is output from VD/BB output connector ⑤.

\* Black burst signal: A composite signal consisting of sync and burst signals.

#### ⑤ SYNC PULSE OUTPUT connectors

75  $\Omega$  output connectors for HD, VD, SYNC and BL signals. Used for the genlock of a B & W camera for DSK or EXT keying.

SYNC: Sync signal output.

HD/BL: HD or BL signal output selectable by the switch.

VD/BB: The signal (VD or BB) selected by the BB-3 select switch of ④ is output.

#### ⑥ AC INPUT

Connect the AC power cable provided.

#### ⑦ DC INPUT

XLR-type 4-pin connector for operating the unit with a 12 V DC power supply.

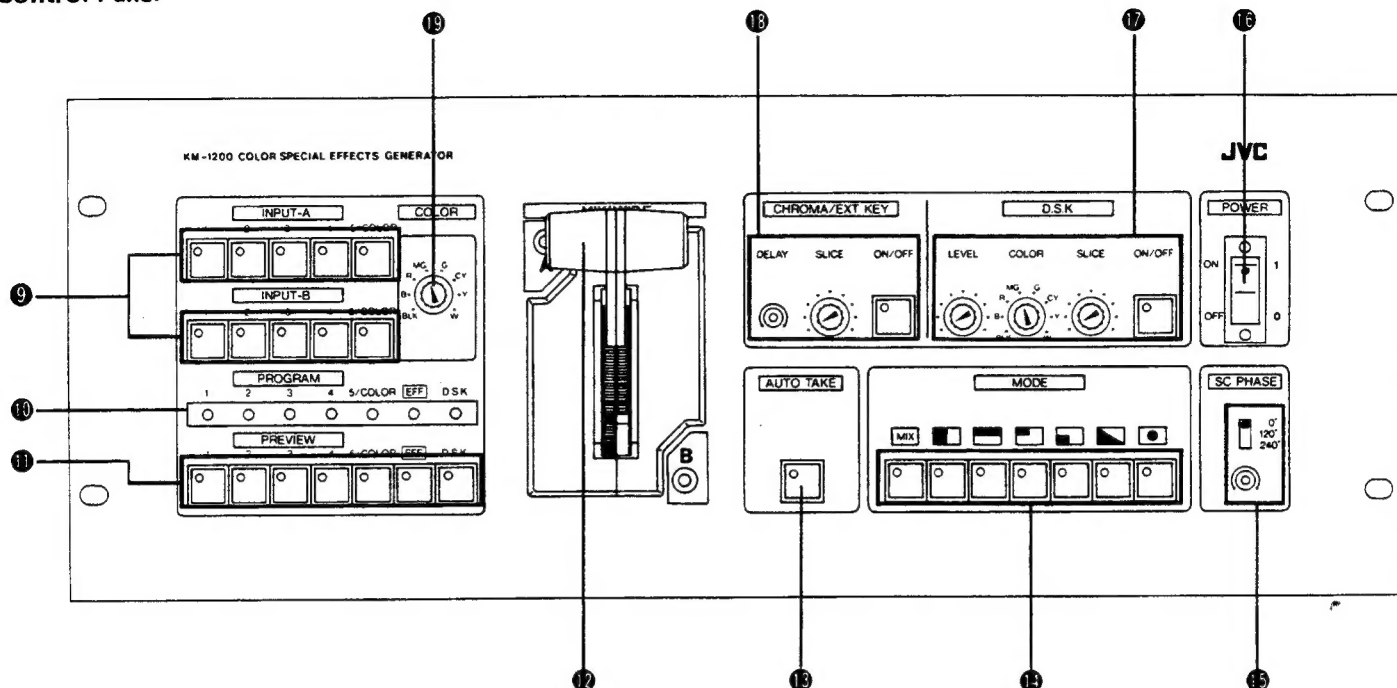
#### Notes:

- The DC power used should have a rated capacity of more than 1.5 A.

#### ⑧ TALLY connectors

The tally system uses the power supply method (with 5 V DC output) and the power is supplied through these terminals.

## Control Panel



### 9 INPUT-A and INPUT-B bus lines

Select the bus lines to be input to the effects circuit (MIX/WIPE) among 5 video signals, which include 4 composite video inputs and the signal selected by VIDEO INPUT 5 SELECT switch 2 (background color or genlock signal). When a button is pressed, the lamp lights indicating the selection of the input.

### 10 PROGRAM OUTPUT indicators

The light indicates the signal output via the PGM output connectors 4.

### 11 PREVIEW bus line

One of the 5 video inputs, effects circuit output signal (PGM) or DSK signal can be selected without it entering the program line, and output via PREVIEW output connector 4.

### 12 MIX/WIPE lever

The lever varies the amount of mixing (of the video signals selected by the INPUT-A and INPUT-B bus lines) when MODE select switch 14 is set for "MIX", and controls wiping when the switch is set for a wipe pattern.

### 13 AUTO TAKE button

When this button is pressed, the video signal selected for the PREVIEW bus line is output as the PGM output. Auto-take is not possible for the DSK signal.

### 14 MODE select buttons

Selects the operation of the effects circuit, among mixing and 6 wipe patterns as shown below.



### 15 SUBCARRIER PHASE control

When the genlock signal is used as one of the images, the hue can be fine adjusted by this control.

### 15 POWER switch

### 17 DOWNSTREAM KEYS controls

Control the keying of the effects circuit output signal using the DSK video signal input.

ON/OFF: DSK signal output ON/OFF button.

SLICE: Adjusts the slice level of the DSK input signal.

COLOR: The color with which keying signal is generated is selected by this 8-position switch: BLK (black), B (blue), R (red), MG (magenta), G (green), CY (cyan), Y (yellow) and W (white).

LEVEL: Adjusts the DSK signal output level.

### 18 CHROMA KEY controls

ON/OFF: Keying signal ON/OFF button.

SLICE: Adjusts the most natural position of keying effect.

DELAY: When there is a delay between the key camera's main line signal (VBS) and chroma keying input signal, adjust using this potentiometer.

### 19 COLOR (background color) selector

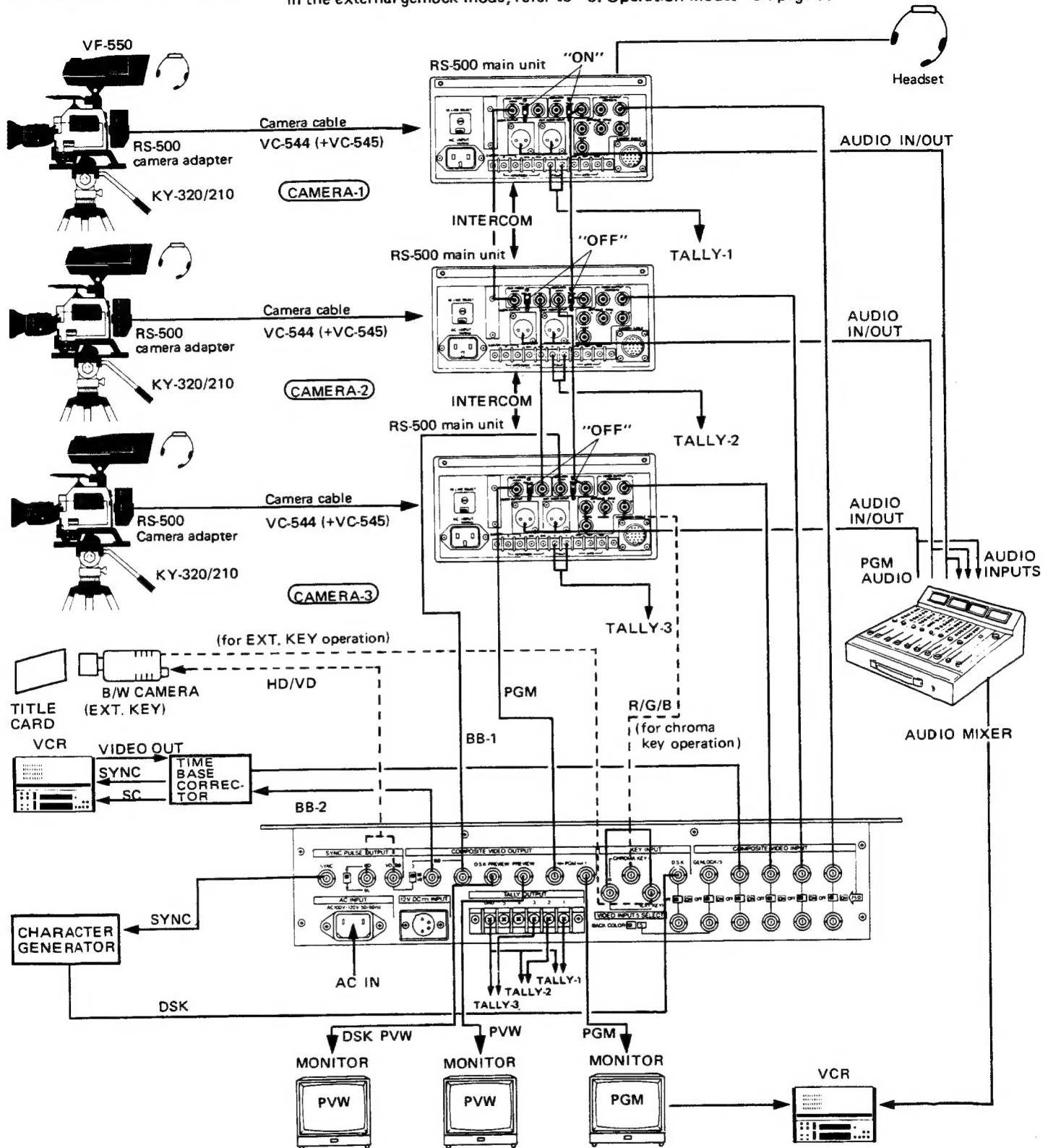
Color background generation is a special effect with which the background of the picture is made a solid color. The signal from the color background generator is supplied to "5/COLOR" of each bus line. This switch is used to select one of 8 background colors; BLK (black), B (blue), R (red), MG (magenta), G (green), CY (cyan), Y (yellow) and W (white).

#### Note:

- The color background function cannot be used when the genlock signal is used as the 5th picture signal.

## 4. CONNECTIONS

This example shows an application of the unit in the internal sync mode. To operate the unit in the external genlock mode, refer to "6. Operation Modes" on page 9.



— Set the 75  $\Omega$  termination switches of all the input connectors which are not connected to "ON". —

### Notes:

- For the connection and operation of the color video cameras, remote control units and video recorders shown in the diagram, refer to the instructions provided with them.
- Chroma and external keying cannot be performed at the same time.
- Video recorder playback signals contain a large amount of jitter (variations of time periods between sync signals) and dropout. For special effects using these signals, we recommend the use of a TBC (timebase corrector).

## 5. OPERATIONS

### 5.1 System Adjustment

After making connections, it is necessary to perform this "system adjustment" as the signal levels and phases are not matched between the individual units making up the system.

Only a simplified adjustment procedure is described here. The adjustment is more precise when a vectorscope and waveform monitor are connected to the output.

**1** Turn on all units in the system.

When power is switched on, the KM-1200 is automatically set for A bus line "1", B bus line "1", PREVIEW bus line "1", MODE "MIX", and PROGRAM "1".

**2** Set the BARS switches of the connected color video cameras to "ON" to generate color bar signals.

**3** Set the controls on the KM-1200 as follows:

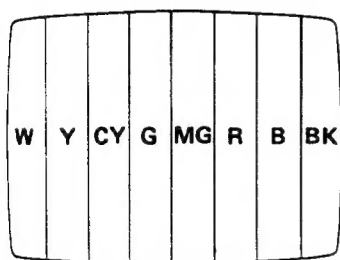
- Set the MIX/WIPE lever to "A".
- Set the DSK ON/OFF button to "OFF" and turn the DSK LEVEL and DSK SLICE controls counterclockwise.
- Set the CHROMA KEY ON/OFF button to "OFF"

**4** Switch the PREVIEW bus-line buttons and monitor the preview monitor to check that the color bars signals from the cameras are input.

- Check that the 75  $\Omega$  termination switches of the input connectors are set to "ON". (Terminate also unused input connectors.)

**5** Adjust the horizontal phase and subcarrier phase.

- 1) Press the INPUT A and PREVIEW buttons "1".
- 2) Press the AUTO TAKE button.
- 3) Press the PREVIEW buttons "1" and "DSK" alternately. At this time, adjust the H PHASE control of the camera connected to "1" so that the picture is not shifted to the left or right on the preview monitor screen. Similarly, adjust the SC PHASE controls on the cameras so that the hues of color bars from different cameras are the same.



**6** Perform these adjustments for all the cameras connected.

**7** Shoot the same object (gray scale, etc.) with all cameras, and fine-adjust the black level (pedestal level), white level (video level) and chroma level, etc.

**Note:**

- For the operation of the color video cameras and remote control units, refer to the instructions provided with them.
- For EXT. genlock operation, subcarrier phase adjustment is necessary. Refer to the second item in "7. Operation Modes".

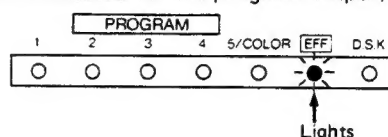
### 5.2 Primary Functions

Before operation, connect as shown in "4. Connections" and perform "5.1 System adjustment".

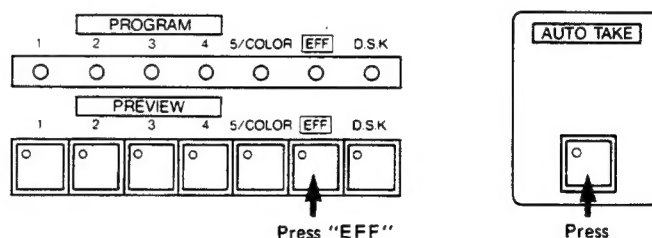
#### 1. Picture selection

##### 1) Switching

- 1 Set the MIX/WIPE lever to "A".
- 2 Confirm that the "EFF" LED of the PROGRAM OUTPUT indicators is lit (indicating that the effects output signal is selected for the program output).



When a different LED is lit, press PREVIEW bus-line button "EFF" then press the AUTO TAKE button. The "EFF" LED lights with this operation.



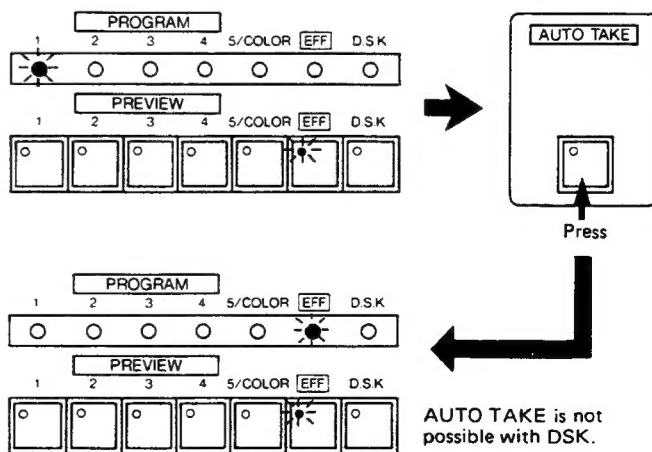
- 3 Press the required button of the INPUT A bus line. The selected signal is output as the PGM output.

**Note:**

- The same operation can be performed with the B bus line when the MIX/WIPE lever is set to "B".

##### 2) Auto-take

Press one of the PREVIEW bus-line buttons selecting the picture on the preview monitor, then press the AUTO TAKE button. The image is output at the PGM output and the tally of the auto-take camera lights.





## 2. MIX operation

The INPUT-A and INPUT-B pictures can be mixed by following the procedure below. The MIX function enables image switching in which the A bus line picture gradually fades while the B bus line picture gradually appears (overlapped or dissolved).

- The effect signal is output at the PGM output using the auto-take operation. (The PROGRAM "EFF" LED lights.)
- Move the MIX/WIPE lever fully to "A".
- Press the required INPUT-A button.
- ① Set the MODE selector buttons to "MIX".
- ② Press the required INPUT-B button.
- ③ Slide the MIX/WIPE lever to "B".

The pictures of A and B bus lines are mixed until the output picture is completely changed to the B bus line picture.

Program (or preview) monitor



INPUT-A



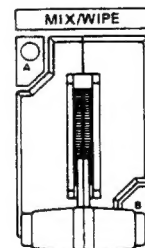
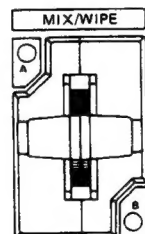
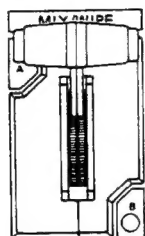
A + B



INPUT-B

MIX

MIX/WIPE lever



Program (or preview) monitor



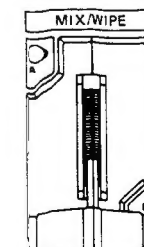
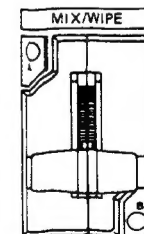
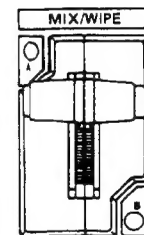
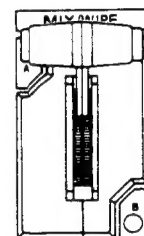
A



B


WIPE

MIX/WIPE lever



## 3. WIPE operation

Change between the INPUT-A and INPUT-B pictures is possible by wiping them vertically and horizontally.

- The effect signal is output at the PGM output using the AUTO TAKE button. (The PROGRAM "EFF" LED lights.)
  - Slide the MIX/WIPE lever fully to "A".
  - Press the required INPUT-A bus-line button.
  - ① Press the required wipe pattern button. (For example, )
  - ② Press the required INPUT-B bus-line button.
  - ③ Slide the MIX/WIPE lever to "B".
- The INPUT-A picture is wiped and finally replaced by the INPUT-B picture.
- The effect varies depending on the wipe pattern:  
Before using this effect, confirm the effect on the preview monitor.

## 5.3 Secondary Functions

### 1. Color Background

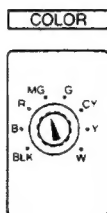
With the color background generation function, a solid color image filling the screen is generated purely electronically without using a camera, and this can be used as one of pictures handled by the KM-1200.

The COLOR switch on the control panel allows the selection of one of the eight colors: BLK (black), B (blue), R (red), MG (magenta), G (green), CY (cyan), Y (yellow) and W (white).

By selecting the 5/COLOR button of each bus line, the color picture selected can be used as the 5th input.

#### Note:

- In the Ext. Genlock mode in which genlock signal is used as the 5th picture image, the color background function cannot be used.

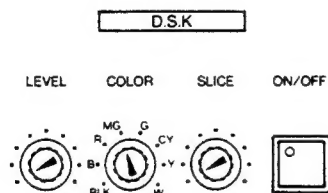


### 2. DSK (Downstream Keyer)

With this function, character or graphic images shot by a B/W camera can be added to the EFF output. These monochrome characters and graphics can be provided with a color by using the colorizer function.

- Connect a color monitor to DSK PREVIEW or PREVIEW OUTPUT, and press the PREVIEW bus-line button "DSK".
- To the DSK input connector, supply signal from a B/W camera or character generator.

- 1 Adjust the SLICE and LEVEL controls so that color picture is observed on the DSK PREVIEW or PREVIEW monitor.
- 2 Set the required color using the DSK COLOR switch.



- 3 Set the DSK button to "ON" so that the DSK signal is inserted in the PGM output.

#### Note:

- When the characters and graphics inserted with DSK have high color saturation, dots may be observed at the edges because of the interference of color subcarriers. This is due to the operating principle of color TV itself and is not a malfunction.

### 3. Keying (CHROMA KEY/EXT KEY)

The KM-1200 incorporates a chroma key signal generator so, by supplying R/G/B signals to the CHROMA KEY INPUT R/G/B connectors, chroma keying is possible with a blue background.

When video signal (positive polarity) of characters or graphics shot by a B/W camera such as a title camera is input to the CHROMA KEY INPUT B connector, keying of A and B bus-line pictures is possible using that signal.

Chroma keying and Ext. keying cannot be performed at the same time.

#### 1) Chroma keying operation

- Set the MODE select button to "MIX".
- Supply the video signal from the color camera for chroma keying (hereafter referred to as key camera) to one of the COMPOSITE VIDEO INPUT connectors.
- Set the CHROMA KEY ON/OFF button to "OFF".



- 1 Set the PREVIEW bus-line button to "EFF".
- 2 Slide the MIX/WIPE lever to "A".
- 3 Press the INPUT-A bus-line button corresponding to the input from the key camera.

Blue background



INPUT-A  
(Key camera)

- 4 With the key camera, shoot the desired object using a blue background.



INPUT-B

- 5 Slide the MIX/WIPE lever to "B".

- 6 Press the INPUT-B bus-line button corresponding to the picture that you want to insert over the blue background shot by the key camera.



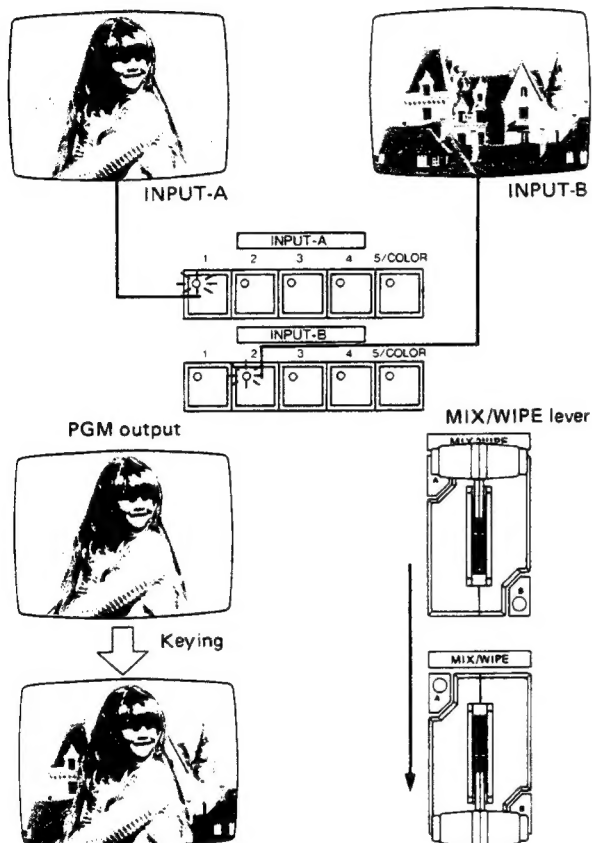
- 7 Set the CHROMA KEY ON/OFF button to "ON".

Adjust the SLICE control so that clear picture is observed on the preview monitor.

- 8 Adjust the DELAY potentiometer so that the contours of the inserted picture are clear.



- 9 Slide the MIX/WIPE lever to "A".
- 10 Press the AUTO TAKE button.  
(The EFF signal is output as the program output, which is, in the case, the signal from the key camera.)
- 11 Slide the MIX/WIPE lever slowly to "B": Only the blue part of the key camera picture is replaced by the B bus line picture.



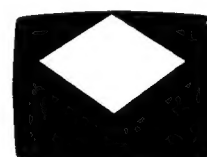
- To use the chroma keying effect as cut switching, follow the procedure below instead of above procedures 9 to 11:
  - 1) Slide the MIX/WIPE lever to "B".
  - 2) Press the AUTO TAKE button.
- When a wipe pattern button is pressed instead of the MODE "MIX" button, you can obtain a superimposed effect by shifting the MIX/WIPE lever.
- By reversing the selections of the INPUT-A and INPUT-B bus-line buttons (when the key camera signal is selected for the B bus-line), the key camera's blue part remains while the A bus-line picture replaces the other parts.

#### Notes:

- The blue part should be as deep as possible so that the blue can be replaced by the picture correctly.
- The illumination of the object being shot should be uniform.
- Usually the DELAY potentiometer does not have to be adjusted once it has been set.
- Chroma keying may not be clearly distinguished if the focus of the key camera is not correct.

## 2) External keying operation

- Supply the video signal (positive polarity) from the video camera for external keying (hereafter referred to as EXT key camera) to the CHROMA KEY B input connector.
- For keying operation in which the B/W EXT key camera picture is black letters/images on a white background (negative polarity), connect the camera signal to the CHROMA KEY R or G input connector.
- Set the MODE select button to "MIX".
- Set the CHROMA KEY ON/OFF button to "OFF".



(Example)  
EXT KEY camera

- 1 Set the PREVIEW bus-line button to "EFF".
- 2 Slide the MIX/WIPE lever to "A".
- 3 Press the INPUT-A bus-line button of the desired picture.



INPUT-A

- 4 Slide the MIX/WIPE lever to "B".
- 5 Press the INPUT-B bus-line button of the picture you want to insert.



INPUT-B

- 6 Set the CHROMA KEY ON/OFF button to "ON". Adjust the SLICE control so that clear picture is observed on the preview monitor.



Preview  
monitor



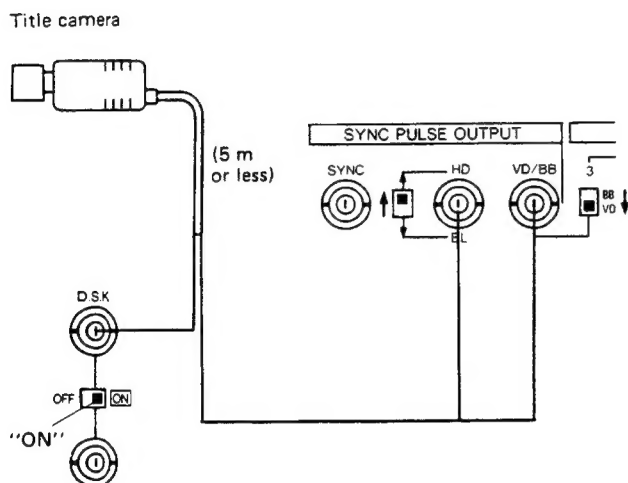
- 7 Slide the MIX/WIPE lever to "A".
- 8 Press the AUTO TAKE switch.  
(The EFF signal is output as the program output, which is in this case the A bus line signal.)
- 9 Slide the MIX/WIPE lever slowly to "B" to perform the keying effect.

#### 4. Title Camera Drive Signal (SYNC PULSE OUTPUT)

The title camera used for DSK or EXT keying should be genlocked with the sync system of the KM-1200.

The sync signal for title camera is supplied from the SYNC PULSE OUTPUT connector. The HD, VD, SYNC or BL signal can be selected according to the camera used.

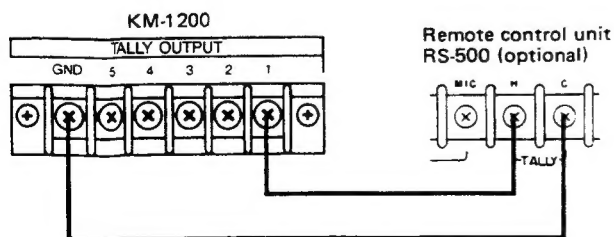
The length of the cable between the KM-1200 and the camera for DSK should be within 5 m or 16.5 ft (5 m for sync supply cable and 5 m for return video cable, 10 m or 32.5 ft in total). When the cable is too long, the H phase may become different when the preview monitor is switched between DSK and EFF.



## 6. TALLY CONNECTION

In a video system using more than one camera, it is necessary to indicate the camera operators and actors which cameras are on-the-air. This function is performed by the tally signal.

- Connect the TALLY connector on the rear panel to the Tally terminal of the other equipment (for example the optional RS-500) as shown below. The KM-1200 supplies 5 V DC to the system.



Operate tally within the following ratings to other equipments.

Voltage supply: 5 V DC, 1 mA max.

## 7. OPERATION MODES

The KM-1200 can operate on either of the following two genlock modes as described below.

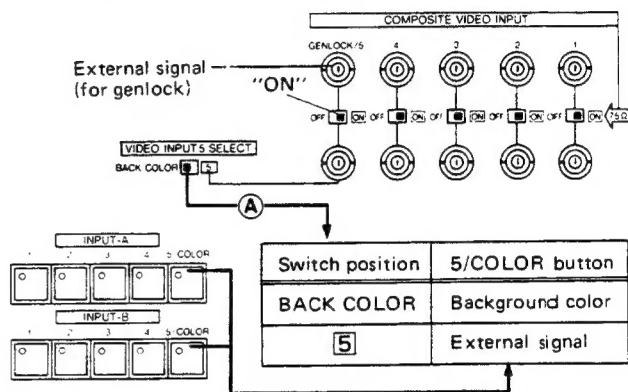
### 1) INT mode

The whole system is synchronized with the internal SSG.

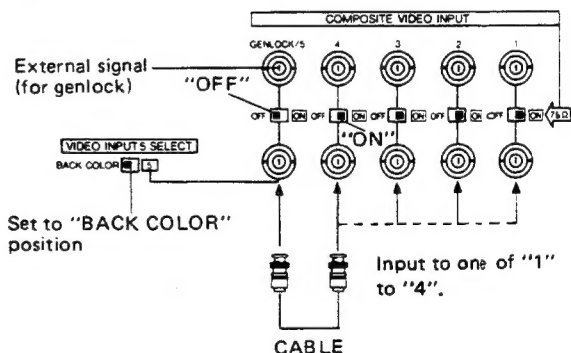
The connection and operation methods in these instructions describe this mode.

### 2) EXT genlock mode

The whole system is synchronized by external composite video signal (VBS) or black burst (BB) signal.

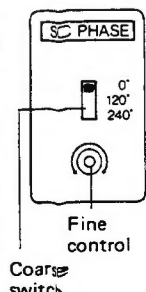


- As shown above, the external signal connected to the GENLOCK/5 connector becomes the genlock reference signal. When switch (A) is set to "5", the external signal can be used as the 5th picture input for each bus-line. When switch (A) is set to "BACK COLOR", the external signal can be used only as the genlock reference signal while the color background function becomes available for each bus lines. (Simultaneous use is not possible.)
- To use the EXT genlock reference signal at the same time for the color background function, use the loop through connection as shown below.



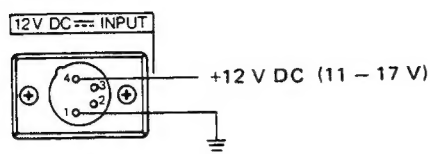
- When using the external signal as the 5th picture input, it is necessary to adjust the SC phase by the following procedure.

- Press the INPUT-A and PREVIEW bus-line switches corresponding to the external signal input.
- Slide the MIX/WIPE lever to "A".
- Adjust the SC PHASE switch and potentiometer so that the hues displayed on the preview monitor are the same when the PREVIEW bus line is alternately switched between "DSK" and the external signal input.



## 8. DC POWER SUPPLY

The KM-1200 can also operate on a DC power supply, by connecting 12 V DC to the XLR 4-pin connector on the rear panel. The rated output of the DC power supply used must have a capacity of more than 1.5 A.



## 9. SPECIFICATIONS

### Input Signals

Video inputs : 5, composite video signals, 1.0 Vp-p (75  $\Omega$  or high impedance looped-through output), termination switch provided (4 inputs in INT mode or when color background function is used in EXT GENLOCK mode)

Chroma key input : R/G/B non-composite or composite video signal, 1.0 Vp-p (with SYNC) or 0.7 Vp-p (without SYNC)

(EXTERNAL key input) : 1, composite or non-composite video signal, 1.0 Vp-p (with SYNC) or 0.7 Vp-p (without SYNC), (Chroma key and EXT key operations cannot be performed simultaneously.)

(DSK input) : 1, composite or non-composite video signal, 1.0 Vp-p (with SYNC) or 0.7 Vp-p (without SYNC) (75  $\Omega$  or high impedance looped-through output), termination switch provided

Genlock input : 1, composite video signal 1.0 Vp-p or black burst 0.43 Vp-p (NTSC)/ 0.45 Vp-p (PAL) (75  $\Omega$  or high impedance looped-through output), termination switch provided

### Output Signals

Program output : 2, composite video signal 1.0 Vp-p, 75  $\Omega$  (BNC)

Preview output : 1, composite video signal 1.0 Vp-p, 75  $\Omega$  (BNC)

DSK preview output : 1, composite video signal 1.0 Vp-p, 75  $\Omega$  (BNC)

Synchronization output : HD, VD and SYNC, BL 4.0 Vp-p, 75  $\Omega$  (BNC)  
 BB1 } Black burst, 0.43 Vp-p (NTSC)  
 BB2 }  
 BB3 } 0.45 Vp-p (PAL), 75  $\Omega$  (BNC)

Tally output : Voltage supply of 5 V DC (10 mA max.)

### Functions

Signal format : NTSC color ("U" version)  
 PAL color ("E" version)  
 Switching system : Vertical interval switching method  
 MIX : With fader lever  
 WIPE : 6 wipe patterns  
 Color background : Generates 8 colors. 1 of the 8 colors selectable  
 DSK : Generates 8 colors. 1 of the 8 insertion colors selectable  
 Chroma keying : RGB chroma key (blue-background), slice circuit and delay circuit provided  
 Synchronization : 2 modes, INT/EXT GENLOCK (with external VBS or BB)  
 External genlock mode SC phase: COARSE (0°, 120° and 240° steps), FINE ( $\pm 60^\circ$  continuously variable)

### Performance

Frequency response : 60 Hz to 5 MHz,  $\pm 0.3$  dB (PGM output 5 to 8 MHz,  $+0.3$  dB,  $-2$  dB)

DG, DP : Less than 2 %, 2° (10 to 90 % APL)

S/N : More than 60 dB (p-p/rms)

Power supply : AC 100/120 V, 50/60 Hz ("U" version)  
 AC 220/240 V, 50/60 Hz ("E" version)  
 or DC12 V

Power consumption : AC 18 W/DC 1.2 A (12 V)

Operating temperature : 0 to 40°C (32 to 104°F)

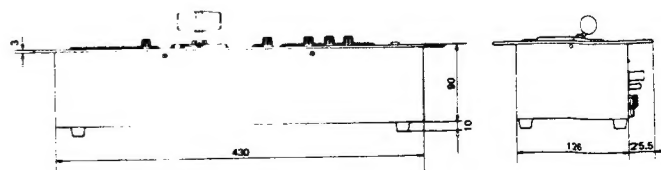
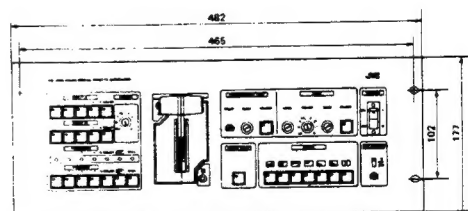
Weight : 4.2 kg (9.3 lbs)

Dimensions : 482(W) x 177(H) x 100(D) mm  
 (19" x 7" x 4")

### Accessory

AC power cable : QMP9003-022 ("U" type)  
 SCV0418-2M5 ("EG" type)  
 SCV0419-2M5 ("EK" type)  
 SCV0420-2M5 ("EA" type)

*Design and specifications are subject to change without notice.*



(unit: mm)